

## NEW CLUB STARTS IN SAN FRANCISCO

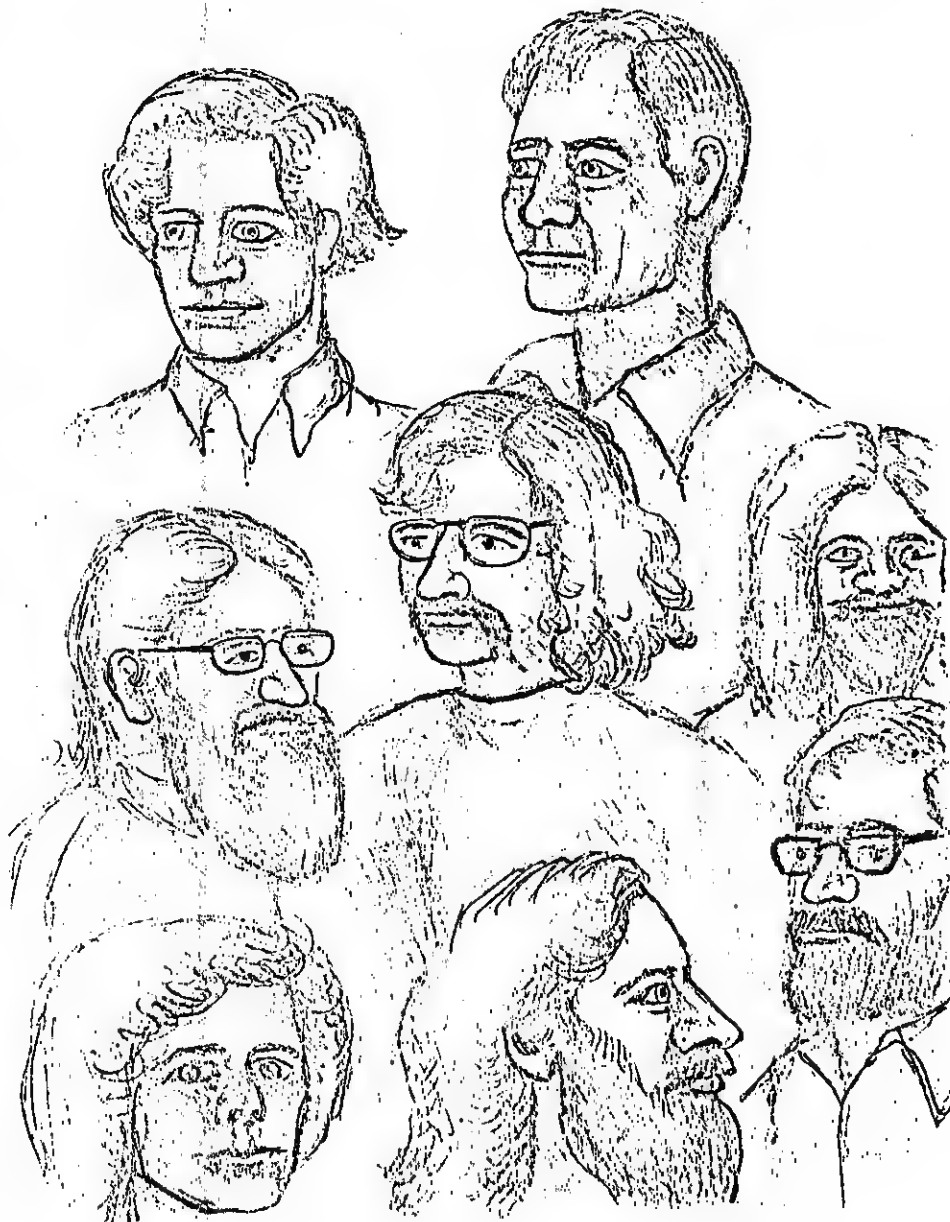
The San Francisco Chapter of the Home Brew Computer Club met April 23 at 54 Winfield St. in S. F. We discussed the use of a Cybercom key to tape encoder as a means of preparing data for a community bulletin board. Bob has one in use at the 24th St. Component Shop which Terry has modified for CRT display. The Cybercom acts like a key-punch machine with 120 characters per record and 400 records per tape. It is capable of searching slowly for a keyword. Admittedly a rather limited device, but Bob feels we should make do with what we have or can salvage. The true amateur spirit.

This Chapter is to be a work/project oriented club. Bring the design for your widget and build it with the mutual help of others doing the same. Bob has test equipment, components, and a workbench available. "Our goal is to give each other concrete practical help in constructing home brew equipment. So if you are having any trouble with your project feel free to ask for help." Here's your chance: implement your dream, no more excuses!

We discovered much interest in information indexing, storage, and retrieving. We got into the whole subject of data banks, information processing, etc., and realized that the important thing is to put people in touch with people, not data or documents. Some excerpts:

Bob: "You have so many people in society exercising an editorial function. In essence I see an electronic community bulletin board as uniquely different in that you are your own librarian. You select what it is that you are going to read of what is in the data bank."

Fritz: "To what level do you go with this? You got all these vectors in this beautiful space: one dimension is name, one is address, one is interest, etc.. Then you step back and class a selected group of vectors with another name, and so on, and you go crazy at a certain point—know what I mean? you are so abstract at some point. How do you wade thru all the garbage?"



Several of us want to see developed some kind of public memory like a bulletin board having items or messages indexed by keywords. Something that is non-secrete and open to anyone at low or no cost. Maybe this can be a long-range project of the Club as a whole. Who else is interested in this?

Thanks to Steve for playing "Fool on the Hill" with his Altair for our enjoyment April 16. (See the next issue of P.C.C. for details of how he did it.) Thanks to Terry for giving us a demo of his Temar TVType-writer with the double-cursor formatting capability. Hope to see more of these around. A special thanks to Gordon for chairing the meetings and getting the club off to a great start. Lee Felsenstein has agreed to take on the job for a while. Thanks to every one for spreading the word. We have over 80 members. Bring your ideas, info, projects, and enthusiasm to share at the next meeting. See ya there.

### Club Treasury Report:

INCOME: We collected \$41.95 April 16 and \$13.00 April 30 and \$3.00 came in the mail. Total income: \$57.95.

EXPENSES: Second newsletter copying costs were \$11.91, postage \$10.00; post card announcing April 30 meeting: copying \$4.55, postage 6.40. Card stock \$.85. Total spent: \$33.71.

OLD BALANCE: April 2, 1975, \$22.24.

NEW BALANCE: As of May 14, 1975, \$46.48. Cost of this newsletter has not been deducted. If you can donate a dollar, it helps.

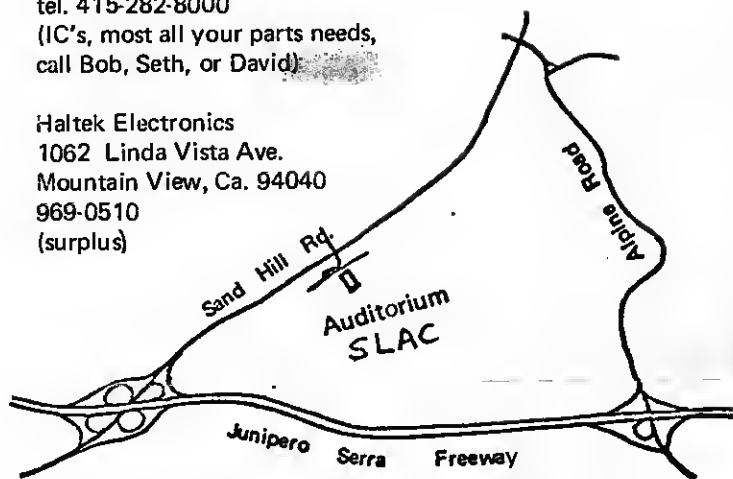
Announcement: University of Santa Clara with IEEE and ACM is presenting "Microcomputer Hardware: A Survey of Recently Introduced Microcomputer Products" on Saturday, May 17, at 8:30 AM to 4 PM at Daly Science Center Room 207 USC, Santa Clara, Ca. Lecturers: Ken Rothmuller, H.P.; Dennis Habgood, Fairchild Semiconductor; Ron Yara, Intel; Mike Lacardo, Scientific Microsystems; Larry Krummell, American Microsystems. Cost \$35 includes lunch. Call 408-984-4518 for further info.

### Local Supply Sources:

R G S Electronics  
3650 Charles Street, Suite K  
Santa Clara, Ca. 95050  
tel. 408-247-0158  
(components, chips, etc.,  
OOBA Microcomputer kit \$375  
call Ray or Karen)

24 th Street Component Shop  
4001 24th St.  
San Francisco, Ca.  
tel. 415-282-8000  
(IC's, most all your parts needs,  
call Bob, Seth, or David)

Haltek Electronics  
1062 Linda Vista Ave.  
Mountain View, Ca. 94040  
969-0510  
(surplus)



**NEXT MEETING WEDNESDAY, May 14**  
7 PM at Stanford Linear Accelerator Center  
in the Orange Room R140 Central Lab  
near the Auditorium. Future meetings  
will be held here or in the auditorium  
every two weeks on Wednesday nite.  
I'll send out a card only if meeting place  
changes. Thanks to Frank and Lenny.

The next gathering of the S. F. Chapter will be at the  
Lawrence Hall of Science in Berkeley, May 21, 7:30 pm.

Michael Witham W6PTK 1655 Longspur, Sunnyvale, Ca. 94087  
(245-0972) Have 8008, video display & parts. which I want to  
make into a small home computer for games, video, and ham  
radio use. Need keyboard.



### DESIGN NOTES by Terry Lee, Consulting Engineer Temar Electronics

Anyone, from time to time, could really use a design consultant to help out with those unreasonably sticky wickets and for finding that "unfindable" information but the price, \$200 to \$1000/day, neatly eliminates the amateur from the scene. To help solve this problem the HomeBrew Computer Club Newsletter will publish in each issue "DESIGN NOTES". Topic which I intend to discuss in future issues include 4k RAMS, CCD's, interface standards, acoustic coupler circuits, micro computer designs, head read/write amplifiers, power supply design, tape disc and drum controllers, data transmission, interface equipment, and lots more. In addition to a main topic I will also include a question and answer section. Anyone having a question should mail it to T. Lee 2400 Geary Blvd # 6, San Francisco, Ca. 94115. (Please make your questions as complete as possible, also be sure to include your return address). Questions that are of general interest will be included in the question and answer section. I also invite your comments and suggestions with reference to the topics discussed in "DESIGN NOTES".

#### HOW ABOUT SART?

##### (SLOPPY ASYNCHRONOUS RECEIVER TRANSMITTER)

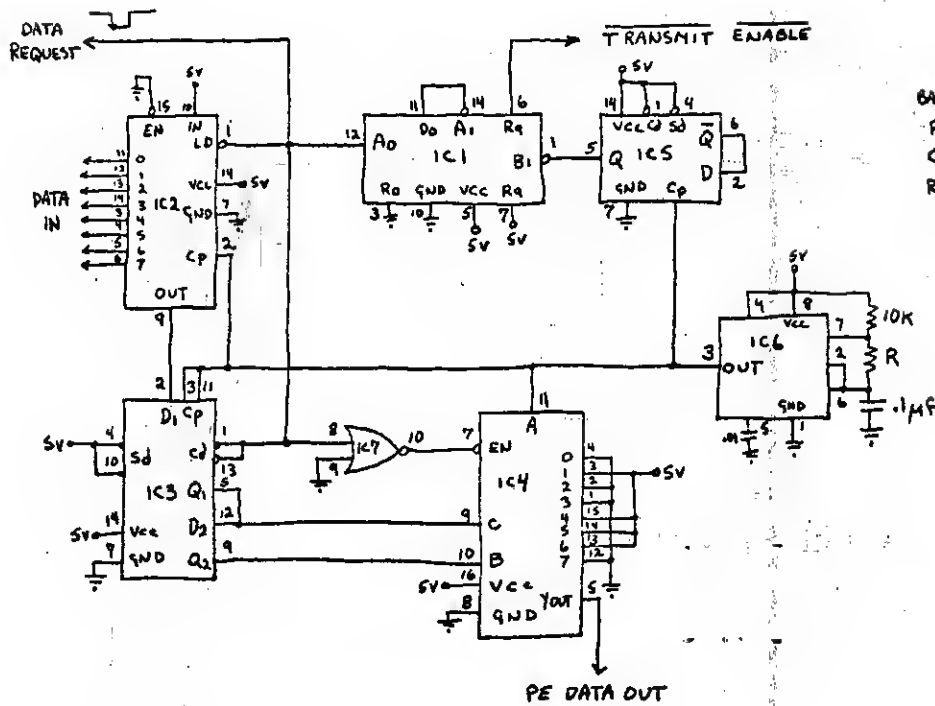
Almost everyone knows that the transmission and error free reception of serial asynchronous data is not as simple as it sounds. The LSI UART is a giant step in the proper direction, however there are some problems, primarily with respect to the need for accurate clocks (this is a big hitch when reading tapes). Well anyway, how about the SART? This design is an Asynchronous receiver transmitter that will handle long term variations of the data rate up to  $\pm 50\%$  and short term variations (bit to bit) of  $\pm 20\%$ . The data is phase encoded and word grouped, each word having a start and stop bit. The start bit is very important in that it is used by the receiver for a time base reference. Time base errors do not accumulate as the word is read because the time base operation is synchronized by incoming data. Note that the data request and data ready signals are negative going edges. The transmit enable signal is active low. The parts cost of this SART is \$15.00.

Well, let's get to the nits and the grits: IC6 is the transmitter clock, its frequency should be equal to the desired BAUD rate. I have included on the drawing typical values for R, however things will go a lot easier if a 100 k $\Omega$  trim pot is used, this way device variations can be tweaked out. Once this clock is set about right, there is no need to mess with it further, unless you change data rate, because the receiver will take out alot of slop.

IC8 is the word detector. This one shot retriggers on incoming data; the pulse width should be equal to 6/BAUD. Here I have included typical values. This pulse is not very critical but here again if you intend to change data rates I would recommend replacing Rx with a trim pot, 50 k $\Omega$  in series with a 4.7 k $\Omega$  resistor. A word of caution, the 4.7  $\mu$ f capacitor must be low leakage.

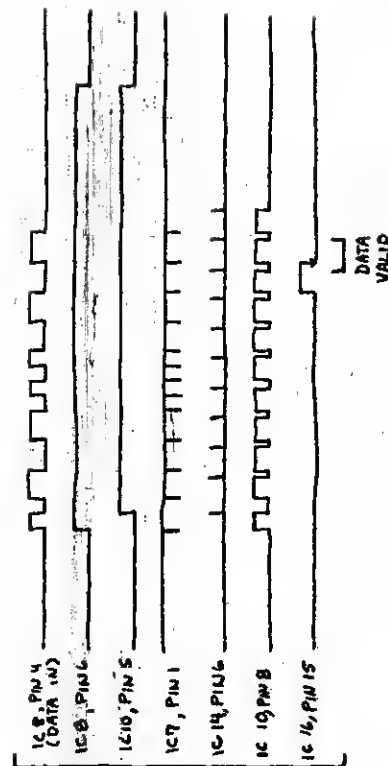
IC9 is the receiver clock, it operates at two frequencies 16·BAUD when IC10 pin 5 is logic 1. I have given typical values here, however, modifying this one is a bit tricky. If  $R_A = R_B < 50$  k $\Omega$  then  $R_C = 4.7$  k $\Omega$  and C can be selected to give the proper frequency.  $F$  (in Hertz) =  $77/C$  (in  $\mu$ f) when  $R_A = R_B = 10$  k $\Omega$  and IC10 pin 5 is logic 0. If selecting capacitors is not your liking try replacing  $R_C$  with a 20 k $\Omega$  trim pot in series with a 1.5 k $\Omega$  resistor,  $R_B$  with a 100 k $\Omega$  trim pot and make C equal to .01  $\mu$ f.

Enough chatter for this issue. Let's hear from you people, don't let this chance for some free consulting get away.

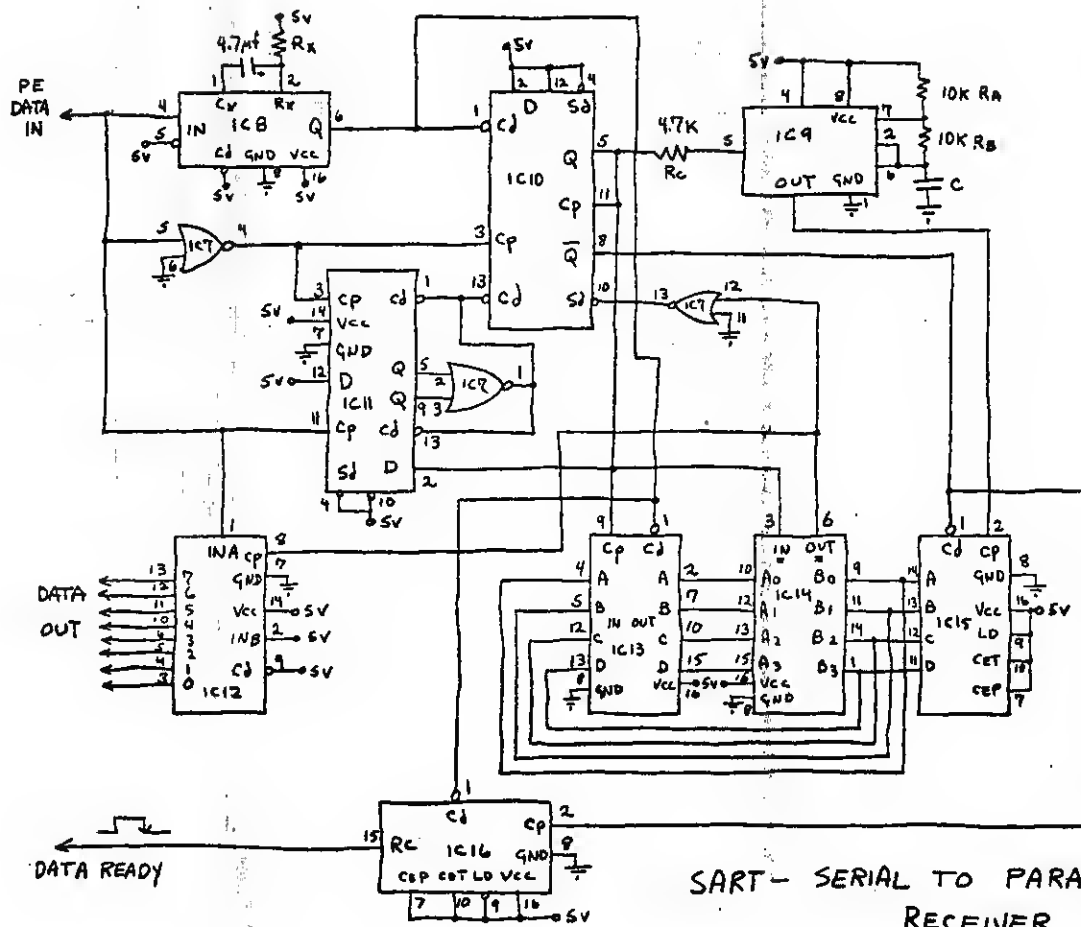


BAUD	110	300	600
R	56K	18K	6.8K
C	.05uf	.016uf	.008uf
Rx	39K	12K	6.8K

IC1	7490
IC2	74165
IC3	7474
IC4	74151
IC5	7474
IC6	555
IC7	7402
IC8	9602
IC9	555
IC10	7474
IC11	7474
IC12	74164
IC13	74175
IC14	7485
IC15	74161
IC16	74160



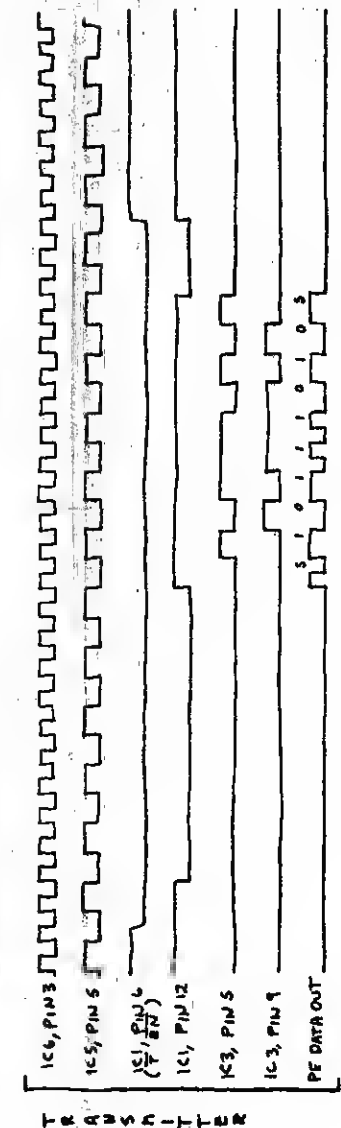
SART - PARALLEL TO SERIAL TRANSMITTER



SART - SERIAL TO PARALLEL RECEIVER

SART WAVEFORMS

EXAMPLE WORD 1011010



Perry Robert Cox 1269 Alcatraz Ave., Berkeley, Ca. 94702 (415-652-0375) is planning on building a computer and CRT. Has approx. 1b years experience as electronic tech. Has a H.P 130 A (500Kc) scope. Needs 8080 chip and software for the 8080, and would like to exchange ideas & parts.

W.H. Dailey 47436 Mantis St. Fremont, Ca. 94538 (tel. 415-656-3054) is working on an intelligent terminal with some stand alone capabilities.

Gordon Davidson 183 Fair Oaks, San Francisco, Ca. 94110 (415-285-3274) plans to build a TVT, UART, and cassette storage system, also a synthesizer. A Control Data graduate with education in peripherals & tech systems, emphasis on digital-analog interfaces. Needs a job. Would like to find a happy medium between organization & money.

Terry Junge 612 Pine St. Santa Cruz, Ca. 95062 (408-427-3579) wants to build an 8008 or 8080 system to play with.

Robert Lash 2309 Byron St. Palo Alto, Ca. 94301  
I have built (and am now de-bugging) a 12-bit microprogramed machine with 1K x 12 main memory and 256 x 30 micro-control store memory. Planning on building a "Graphic CRT" (128 vectors on a scope), modifying an ancient Burroughs 52B00 mag tape drive, interfacing an antique model 12 tty, building TVT (i), rebuilding a paper tape reader. Designed 4-bit computer with a friend. Writing an assembler (MORAL: Machine Oriented Assembly Language); plan some day to write FABOL (Fortran-Algol-Basic Oriented Language) compiler. Plan to do some graphics, perhaps some enjoyable gaming. Willing to assist others in TTL design. Have scope, VTVM. Need RAMs, 2102's would be nice.

Gerald McKee Maj USAR 2583 Bobolink Drive San Jose, Ca. 95125 (tel. 408-266-4016) have a RGS-00BA Mini with 2K mem (16K cap.); cassette periph; video cart (vision); CCTV system; video Monitors; Drake SSB Stateion. Have R.E. TVT built, not yet fully debugged, keytronic keyboard not yet conquered (prints don't match actual boards). Use primarily self-training in computer technology, digital and IC tech up grading of my education Secondary use as business bookkeeping - inventory control; etc. Experience: 34 years in electronics/broadcasting/radio/TV (servicing D.J. Eng. Technician). Solid State (nil), IC (nil) computers (nil), programming (nil). Ham radio: W6ZQT/K2KOJ/K7LJF/BV1USB/EP2GF— 20 yrs US Army. Have a dual trace lo-105 scope, IM-25, cap checker; 15 V reg ia. Need RTTY-Microprocessor modem? telephone modem-coupler. Does anyone have a job for me? I've been unemployed one year.

Memo Park, Calif. 94025

Frank Rothacker, SLAC, Oox 4349, Stanford, Ca. 94303 (tel. 415-854-3300 x 2624) working on an Altair for experimentation.

Stepheli Switzky 1820 W. Bayshore #19 Palo Alto, Ca. 94303 (415-321-2773) planning on building a LSI-11 with TV, keyboard, modem, floppy disk, for use as a text editor, calculator, alarm-clock, reminder system, hacking, music. Skills in programming.

Bill Schenker Apt. 4, 660 Tempe Court, Pl. Hill, Ca. 94523 (415-687-BB004 [?]) have SCM typewriter (read only), paper punch and reader, line printer (mechanicals only, no electronics yet); half a TVT. Completed an editing typewriter (a TVT with v/c and l/c, 64 char. line x 20 lines, scrolling, 4 pages of memory, cassette storage); planning on building 8080 computer with floppy. Use as editor and medical information system prototypes. Have knowledge of mechanicals & electronics of SCM system and medical info system concepts. Have a dual trace, dual time base, 50 MHz scope, and frequency counter (to 10MHz). Need info on easy way to convert a TV to 5 - 6 MHz bandwidth, also TVT to 64 char. lines x 20 lines.

Adrian Schraunel 3155 Stockton Place, Palo Alto, Ca. 94303 (tel. 494-6256 home; 965-1000 work) planning on building an Altair and TV terminal for automatic control of lights & music, bookkeeping, time keeping, inventory. Experience in electrical engineering. Have EICO 5MC scope, frequency meter, micro amp meter, misc test instruments. Need terminal kit, ASCII or a convertible type.

Peter Sinclair 939 Tamarack Ave. San Carlos, Ca. 94070 (415-593-2733) working on an Altair. Have built and etched many PC boards. Have an extra 8080 chip. Are there any other easier or more economical computers to build with the 8080 than the Altair?

David Uggle 446 Forest # 2 Palo Alto, Ca. 94301 (328-6292) Thinking of Altair or LSI PDP-11. Use: Amateur radio control and translation, process control of assorted hobby & home items, rapid info transfer by phone. Experience in Algol & Fortran, general electronic construction & testing. Have a model 19 TTY.

Jim Warren, Jr. Star Rt Box 111 Redwood City, Ca. 94062 (tel. 851-7075, 851-7664, 497-1668) have Terminet 1200 with acoustic coupler. Working on a machine-independent programming system capable of compiling high-level source code into object code for any described minicomputer or micro-processor. Have 8 years of systems & applications software development experience, the vast majority of it being at assembler level on minis. Interested in helping with publications.



Lenny Shustek  
P.O. Box 3210  
Stanford, Ca,

94305